3-03-2003

State of Louisiana
Department of Transportation and Development (DOTD)
Materials and Testing Section Qualification Procedure
for
Qualified Products List 40

CONCRETE ANCHOR SYSTEMS

MATERIAL SPECIFICATION REFERENCE:

DOTD Standard Specifications, Supplemental Specifications and Special Provisions, Subsection 1018.23 (copy attached)

PRELIMINARY REQUIREMENTS:

Qualified Product Evaluation Form

The manufacturer shall submit a standard "Qualified Product Evaluation Form" to the DOTD Materials and Testing Section Coordinator listed below for each system to be evaluated, along with a letter requesting evaluation for the Qualified Products List.

Product Data Sheets

A product data sheet for each system shall also be submitted showing the manufacturer's specifications, anchoring instructions, available sizes, embedment depths (if applicable), ultimate pull-out and shear test results of anchors installed in 27.58 MPa (4,000 psi) concrete, product limitations (such as hole diameter tolerances, moisture limitations, etc.), and Materials Safety Data Sheet (MSDS).

Samples (to be furnished at no cost to the Department)

Submit for each system three 13 mm (three ½ in.) diameter anchors and three 19.05 mm (three 3/4 in.) diameter anchors to be embedded in hardened concrete in accordance with the manufacturer's written instructions for pull-out tests. For systems which include the anchor bolt, an additional sample of the 13 and 19.05 mm (½ and 3/4 inch) bolts will be required so that the tensile and coating properties can be determined.

Concrete Blocks

The manufacture shall provide concrete slabs with the following requirements:

1. Must have a minimum compressive strength of 4,000 psi. This shall be verified by at least four 6" x 12" concrete Cylinders per mix.
2. Must be located locally with access to electricity and air compressor.
3. Must have adequate surface area and depth to perform the pull-out tests.
4. Cost and disposal of the concrete slabs will be borne by the manufacturer.

Special Tools

The manufacturer will provide the special tools needed for the evaluation.

TEST REQUIREMENTS:

Laboratory Testing

A full size 13 mm and 19.05 mm (½ in. and 3/4 in.) bolt will be tested for tensile and coating properties. In addition, test specimens will be anchored in concrete in accordance with the manufacturer's instructions so that pull-out tests can be conducted to verify the manufacturer's ultimate pull-out strength data. The manufacturer's representative shall be present during the evaluation of anchors to ensure proper installation and handling of the material. Prior to the evaluation, special adaptors or other tools which may be required for the installation shall be supplied to the Materials Section Coordinator.

All anchors will be tested for pull-out resistance individually. A loading frame will be placed directly over the installed anchor such that a tensile pull-out load can be applied to the anchor with the aid of a hydraulic jack. The ultimate load carried by each anchor will be reported as well as the mode of failure. The mode of failure may occur by one or a combination of the following:

1. Failure of the concrete test slab
2. Bond failure between the anchor and test slab
3. The yielding or fracture of any component of the anchor system

Acceptance of the anchor system will be subject to the following:

1. Conformance of the anchor bolt tensile and coating properties with the manufacturer's specifications.
2. Conformance of the Materials and Testing Section's pull-out tests with a minimum of 90% of the manufacturer's ultimate pull-out results for 13 and 19.05 mm (½ inch and 3/4 inch) anchors installed in 27.58 MPa (4,000 psi) concrete.

During the pull-out tests, failure of the concrete test slab at loads less than 90% of the manufacturer's ultimate strengths will render the test invalid, and the results will be discarded. If, for either the 13 and 19.05 mm (½" or 3/4") anchor size, all three pull-out tests are invalid, then a retest will be allowed consisting of three additional pull-out tests per size.

The yielding or fracture of any component of the anchor system or failure of the bond between the anchor and test slab will be considered a valid test, regardless of the pull-out loads obtained. Failure of either the 13 and 19.05 mm (½" or 3/4") anchors to conform with the above will result in rejection of the system.

Evaluation Time

Laboratory Testing - 1 month

GENERAL:

Upon completion of the evaluation, the submitter will be notified in writing concerning the results of the evaluation and whether the product will or will not be added to the Qualified Products List. If a product is to be added to the Qualified Products List, the working loads, calculated as 25% of the manufacturer's ultimate pull-out and shear results, will be listed for each size anchor and corresponding embedment depths. The Department reserves the right to reevaluate any approved product at any time.

PROJECT ACCEPTANCE REQUIREMENTS:

Qualification of a product is not blanket approval for its use. A sample of each system shipped to a project will be sampled by Department personnel prior to use in accordance with the Department's Materials Sampling Manual. These samples will be tested for conformance with contract specifications regardless of prior approval.

DISQUALIFICATION:

Any product may be removed from the Qualified Products List for non-conformance with specifications and unsatisfactory field performance. The Department must be notified in writing of any name change or change in product formulation. Significant changes may require reevaluation of the product.

REQUALIFICATION:

A product which has been disqualified and removed from the Qualified Products List will be considered for reevaluation only after submission of a formal request along with acceptable evidence that the problems causing the disqualification have been resolved.

DOTD MATERIALS AND TESTING SECTION COORDINATOR

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